CHAPTER 4

ORGANIZATIONS, INSTITUTIONS, EXTERNAL SETTING AND INSTITUTIONAL DYNAMICS

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Abstract: To study the dynamics of forest regimes, an institutional analysis framework which takes account both of factors internal to the institutions and organizations as well as of the external setting - the social, environmental, economic (including markets) and international factors – is developed. Adaptive efficiency, an efficiency measure different from allocative efficiency, is suggested for institutional changes that are path-dependent rather than just price or market-dependent. The framework is used to analyze the dynamics of Indian forest regimes. The main feature of those dynamics has been incremental path-dependent change, the exception being the sudden shift from the dominance of community regimes in the pre-British period to that of state regimes in the British period. The dominant factors in this pattern of incremental change have varied markedly over time. In pre-colonial India the inertia of the informal institutions played a major role. At the outset of the colonial period, "organisational energy" was directed at the dismantling of the existing institutions. But, later many self-reinforcing mechanisms contributed to path-dependent changes. In post-colonial India, self-reinforcing mechanisms at the level of the Legislative Wing (LW) and "organisational inertia" of the Executive Wing (EW) dominated the process of institutional change for a time. But, later the "organisational energy" of the LW, the external setting, and "organisational surges" of the EW allowed more rapid change. The adaptive efficiency varied – higher in decentralized regimes of pre-British India and recent regimes and lower in the centralized regimes of British India and the first four decades of independent India. Organisational inertia has been one of the main factors impeding institutional changes towards adaptive efficiency. Hence, policy and management prescriptions for sustainable forest management, in these countries, should address institutional and organisational aspects in an integrative manner.

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1. INTRODUCTION

Neo-classical economic theory, when applied to natural resources, is generally focused on technological developments but ignored the institutional structure that shapes the interactions between policy makers, resource managers and resource users. The set of institutions that serve to order the actions of those involved with forest resources is commonly termed the forest (resource) regime (Young, 1982, p.15). In terms of forest regimes, discussion in the neo-classical framework has been limited to private forest regimes versus state controlled forest regimes. However, over the last decade or so there has been an increasing recognition of the importance of institutions as a determinant of economic performance, and need to extend the institutional discussion beyond private and state regimes. One of the important elements of that discussion is the process of institutional changes termed as "institutional dynamics". Institutional economists, such as Coase (1960), Commons (1961), Ayres (1962), Veblen (1975), Schotter (1981), Bromley (1989), North (1990), and Setterfield (1993) have discussed the issues related to institutional dynamics. However, these economists have mainly emphasized the role of existing institutions, their inertia, and market forces as critical factors in institutional dynamics, and the role of organizations, their inertia, and external factors other than market forces have not been adequately incorporated into the thinking of institutional economists[1].

In the context of new paradigm of sustainable forest management, an understanding of the dynamics of forest regimes has become critical, and it has generated a huge literature on dynamics of forest regimes. However, most of these discussions are in the framework of public policy analysis, where mainly the role of government has been analyzed. Some examples of these discussions are McCarthy (2000) and Cashore (2001). Kissling-Naf and Bisang (2001) used property right approach and public policy analysis, and Kant (2000) included socio-economic factors in their analyses of forest regimes. In the case of India, since the early eighties, many scholars[2] have discussed the dynamics of forest regimes. Some have focused on forest regimes specifically; others have treated those regimes as a part of a broader environmental analysis. Guha, Gadgil, and Shiva - probably the most prolific writers on the topic - are highly critical of the “technocratic” state which disregards indigenous knowledge systems and cultural practices. They call for the replacement of state management of forests (and other natural resources) by community-level management. To analyze institutional changes from 1976 to 1994, Vira (1995) uses the concept of *relative autonomy*, in which the state is an arena of social conflict among social groups which are not political or economic equals. He explains changes in forest regimes in terms of the shifting configuration among ten forest-dependent groups (including state agencies). Rangan (1997) does not see the state as the powerful and predatory monolith visualized by Guha, Gadgil, and Shiva, operating independently of markets and civil society; in his view natural resource management policies are affected by a wide range of groups and processes.

Most discussions of the dynamics of forest regimes, however, do place the state at the centre of the economic and political processes leading to institutional change. These discussions completely disregard the role of institutional factors in the

dynamics of institutions, discussed by institutional economists. In addition, state power is not a simple concept; it is exercised through a variety of institutions with their own organizational structures (Pathak, 1994). The interests of various social groups and the demands stemming from economic, social, and environmental forces are translated into new institutions and actions through the operations of existing institutions and state organizations. But, the role of (state) organizations has not attracted the desired attention of either institutional economists or political scientists in the discussions of dynamics of institutions, specifically dynamics of forest regimes[3].

To understand the process and path of institutional change, and to draw lessons on how to channel such change towards efficient outcomes, requires consideration both of factors internal to the institutions and organizations as well as of the external setting- the social, environmental, economic, and international factors which form the context for change. In this chapter, we develop such a framework and use it to explain the dynamics of forest regimes in India. The framework is discussed in the context of the dynamics of forest regimes, but the main features of the framework – organizations, institutions, external setting, and their interactions – will remain the same irrespective of the context.

Our framework for the analysis of forest regime dynamics has its roots in institutional economics, as explained in Section 2, and is presented in Section 3. Section 4 deals with the main features of forest regimes in India during the pre-colonial, colonial, and post-colonial periods, the dynamics of forest regimes, and the nature of changes and factors contributing to those changes. Section 5 reviews the impact of recent changes in forest regimes towards community-based regimes. Finally, some policy implications are drawn.

2. AN OVERVIEW OF INSTITUTIONAL ECONOMICS

Among economic analyses giving serious attention to institutions a distinction has emerged between the Old Institutional Economics (OIE) and the New Institutional Economics (NIE). The former, associated with authors such as Commons (1961), Ayres (1962), and Veblen (1975), is characterized by an holistic approach stressing the idea that individual behavior and phenomena cannot be explained without taking due account of the context. This perspective gives considerable emphasis to institutions relative to the activities and choices of individuals in the determination of economic outcomes (Setterfield, 1993). The NIE, associated with authors such as Coase (1960), Schotter (1981) and Williamson (1985), emphasises the importance of the self-interested behavior of individuals and posits that, during the evolution towards a market economy, institutions arise because they are valued by rational economic agents. Bromley (1989) argues that such positive valuation of institutions may be related not only to their contribution to allocative efficiency or to a desired redistribution of income but also to profit-seeking unproductive activities.

Both variants have been criticized for being unidirectional - the OIE for overlooking the impact of individual behavior on institutions, and the NIE for overlooking the impact of institutions on individuals' behavior. To overcome these

shortcomings, Setterfield (1993) has suggested a model of institutional hysteresis characterized by the short-term exogeneity and long-term endogeneity of institutions. In the short-term, due to a degree of, it is the institutional setting which mainly guides economic activities. In the longer-run, however, institutional changes come about through pressures from the current patterns of economic activity--pressures that are also usually counterbalanced to some extent by the forces of institutional inertia. In other words, long-run institutional changes are evolving, not-necessarily-optimal, path-dependent phenomena[4], unlike the standard equilibrium metaphor of mainstream economic theory.

Another new variant of the theory of institutional change has recently been posited by North (1990), with foundations in the theory of technological change proposed earlier by David (1985) and Arthur (1988). David described a form of path-dependent technological change beginning with a set of accidental events, and identified strong technical inter-relatedness, scale economies, and irreversibilities due to learning and habituation as the main factors contributing to path dependency. Arthur (1988) linked path dependency to the increasing returns economy, which was seen as characterized also by multiple equilibria, and the related possibility of inefficiency and lock-in. He identified four generic sources of self-reinforcing mechanisms: large set-up or fixed costs; learning effects; coordination effects; and adaptive expectations. These concepts have been used to explain the choice of AC electricity (David and Bunn 1987), the selection of light-water nuclear reactors, and the gasoline engine (Arthur 1989), as well as the FORTRAN computer language and VHS videotape formats (Arthur 1991). This literature on technological change draws a number of parallels to the broader process of change, including, mostly implicitly, institutional change. However, North (1990, pp. 92-104) incorporated explicitly in his explanation of institutional change a group of concepts associated with increasing returns and imperfect markets - path dependence, lock-in, and existence of inefficiencies. North argues that increasing returns are an essential ingredient to technological as well as institutional change, and all four of Arthur's self-reinforcing mechanisms apply, although with somewhat different characteristics. North also observes that the perceptions of actors play a more central role in institutional than in technological change. North (1990, pp. 97-98) used the example of the Northwest Ordinance to illustrate a path-dependent pattern of institutional evolution.

In summary, both Setterfield's model of institutional hysteresis and North's theory based substantially on increasing returns point to the path-dependent nature of institutional change. The partial counter-balancing of the external forces for institutional change, which may be continuous in nature, by internal factors (such as institutional inertia and self-reinforcing mechanisms), results in path-dependent incremental institutional change. Many economists have used the concept of path-dependent evolution of institutions in a variety of different fields and drawn related policy implications; examples include electric power in the city of Chicago (Throgmorton and Fisher 1993), investments in fossil fuel conservation (England 1994), environmental decline (Goodstein 1995), and urban sprawl (Atkinson and Oleson 1996). However, in this framework, it is assumed that there is no effect or role of organizations in shaping institutional changes, and there are no interactions

between institutions, organizations and external setting. Next, we propose a model of the institutional (forest regime) dynamics in which all three components and their interactions are included explicitly.

3. A FRAMEWORK FOR ANALYSING THE DYNAMICS OF INSTITUTIONS (FOREST REGIMES)

Institutions refer to the rules, norms, codes etc., whether formal or informal, which define the rights, privileges and obligations of various groups under a regime. Organizations are physical manifestations of institutions, designed by their creators to achieve certain objectives. An organization is a collection of functions carried out by people who are influenced by organizational culture, norms, and practices and who in turn influence the implementation of institutions and the pattern of institutional change (Sastry, 1997). Organizations do not operate in a vacuum, but are continuously subjected to external forces, commonly referred to as the external setting. These three essential elements -institutions, organizations, and external setting - and the interactions among them, determine the dynamics of institutions - forest regimes. We now discuss each in turn.

3.1 Institutions

Forest regimes, like other institutional structures, include both formal and informal elements. Formal institutions involve formal rules that operate at a minimum of two levels - rules for making the rules and operational rules. For India the constitution constitutes the first or upper level. Various levels of operational rules can be distinguished, with overall forest policy at the top and legislation such as the Indian Forest Act, government orders, and guidelines[5] by the central government to translate broad policy decisions into actions forming a second level. The follow up state government acts, orders, and directions constitute a third level, and corresponding/resulting orders and directions by the head of the state forest department a fourth. Other levels may be present depending on the complexity of the hierarchy. Our focus here is on the first level of operational rules - the changes in forest policy, and within that the particular issue of inclusion/exclusion of local people in forest management, and the process of change between regimes where they are included and regimes where they are excluded.

A necessary condition for the effectiveness of formal institutions is reasonable compatibility with informal institutions (North, 1990; Kant & Cooke, 1998). The informal institutions of a local user group with respect to forest resource use/management are embedded in broader informal institutions, such as those relating to the management of other natural resources (water and pastureland), religious places, and schools; these in turn are part of the group's culture (Kant, Singh, & Singh, 1991). Since cultural change tends to be very gradual, this embeddedness means that changes to the informal institutions associated with forest regimes are also likely to be incremental and that formal forest resource institutions will be subject to the inertia of these related informal institutions. Formal forestry

institutions are linked both vertically- with other institutions at different levels but involving the same resources or issues, and horizontally-with institutions involved in other relevant areas such as general administration, tax administration, etc. Institutional integration via these links may make the costs of/or impediments to change in any given area prohibitively high; even if one institution is in favor of change, others with which it interacts may not be, so that, as a whole, the group of relevant institutions may demonstrate strong inertia against change. These change-retarding forces may involve "frequency dependency effects", whereby the strength of a particular set of institutions depends upon the frequency with which they have held sway in the past. Complexity of institutions can also generate inertia against change. The forces against institutional change generated by such features as integration, complexity, repetition etc. are termed "institutional inertia" and may arise from informal institutions - "informal institutional inertia" - or from formal institutions - "formal institutional inertia".

3.2 Organizations

Organizations are created to pursue certain objectives identified by their creators. In the case of business organizations, owners (shareholders) are the creators. In the case of government organizations in a Parliamentary Democracy, the Legislative Wing (LW) of the state is the creator, which also defines the broad objectives, while the Executive Wing (EW), composed of organizations such as the forest department, is responsible for carrying out the designated functions; the interaction of the formal institutions of forest management with the informal institutions of local user groups occurs largely through the EW (forest department).

In principle, an organization should work efficiently to achieve the objectives of the creators. But, its members may develop their own goals in addition to or even in conflict with those of the creators; the resulting conflicts are well documented in the literature on the "principal-agent problem" (Jensen & Meckling, 1976). Not infrequently the creators want to reform the organization, but meet resistance in the form of the attitude of managers, self-reinforcing mechanisms related to the informal institutions (or culture) of the organization, or organizational structure. Organizational resistance based on forest managers who are unwilling to subjugate their own interests to those of the owners is referred to as “attitudinal inertia”. Normally, the creator (the LW) develops prescriptive rules (codes of conduct) for interactions among the members of an organization, but over time the members develop informal institutions governing their day-to-day behavior, attitude, and interactions with each other--an "organizational culture". The self-interest of the forest managers and the associated organizational culture give rise to many self-reinforcing mechanisms which impede institutional change, like the irreversibilities due to learning and habituation referred to by David (1985). Resistance created by these mechanisms is termed "cultural inertia". Sometimes it is not so much the attitudes or the culture of the organization but its structure which impedes institutional change; we refer to it as "structural inertia". Organizational resistance to

institutional change, fed by "attitudinal inertia", "cultural inertia", and "structural inertia", is termed "organizational inertia (OI)".

The degree of organizational inertia varies from case to case. Sometimes, even where the gap between the organizational culture and the intent of the creators has become wide, there are individuals not fully immersed in that organizational culture, whether because of their short period in the organization, their prior experience from other organizations, their social background, or their particular life goals. They may, for example, be concerned with the external image of the organization and will respond to external pressures such as the needs and demands of forest-dependent groups. They contribute to what we call "organizational energy (OE)" for institutional change. Normally such energy is low. But if some innovative but risky experiment beyond the boundaries of the existing formal institutions is undertaken by a few of its members and meets with initial success this induces other members to join them, and may generate enough organizational energy to change existing institutions. We refer to such events as "organizational surges (OS)". In other situations "organizational energy" may reflect a sort of takeover, as where organizations implanted by foreign rulers or local organizations acquired by multi-national companies have enough “organizational energy” to dismantle the existing institutions.

In the case of government organizations, the LW (the creator) also exhibits the characteristics of an organization. However, there are critical differences between the LW and the EW. First, in a parliamentary democracy, the LW is directly responsible to the people while the EW is not. Second, the tenure of the members (elected) of the LW is only a few (four or five) years, so that a newly elected LW may have a different ideology from that of its predecessor; tenure of the EW members is typically much longer, say 30 to 35 years where job security is high. Third, the role of leadership in the LW is more prominent than in the EW. Hence the degree of "organizational inertia" is likely to be less and the degree of "organizational energy" greater in the LW than in the EW, and individual leaders can be a source of much "organizational energy".

3.3 External Setting

The external setting of any forest regime is shaped by social, economic, political, environmental, and international factors as well as by various forest-dependent groups, and by the interactions between these factors and groups. Environmental groups will play a major role in bringing environmental issues to the forefront. Economic factors such as liberalization will change the nature of dependence of forest industries on forests, and social movements and social awareness may change the outlook of local user groups towards forest management. International factors such as the forest policies of the United Nations, the World Bank and foreign governments, along with changing governance systems (centralization versus decentralization) are part of the external setting.

3.4 Interactions between External Setting, Organizations, and Institutions

Elements of the external setting normally interact with the top formal (policy) level of forestry institutions through the LW; if the energy they create breaks the inertia there, it may lead to a re-examination of the objectives of forest management. Normally, such a re-examination will be done by the EW, and its outcome will reflect the balance between the organizational energy of the LW and the inertia of the EW. In some cases, "organizational surges" may reduce the OI of the EW and/or enhance the OE of LW, so that significant changes are accepted by the EW. In exceptional cases, such as the presence of very strong leadership, the LW may direct the EW to pursue new social objectives without any review by the latter; in the opposite case, if formal objectives are changed at all they may be defined ambiguously to accommodate the conflicting demands/interests from the changed external setting on the one hand and the managers of the organization on the other.

In any case, change of formal objectives is only a first step toward institutional change, which can be grouped in two categories – path-dependent incremental change and path-independent discontinuous change. Normally, an institutional structure is comprised of a variety of formal rules, enforcement procedures, and informal norms, and institutional change takes the form of marginal adjustment to this complex institutional structure. Consider, for example, a community forest regime which consists of decision-making rules, boundary rules, exclusion rules, harvesting-quantity rules, harvesting-period rules, penalty rules, and conflict-resolution rules. Suppose that, at some point, the harvesting period is extended from three to four months. Such change is incremental because only a marginal change has been made to the overall structure of the community forest regime, and it is path-dependent because it has been influenced by the history of the regime. A path-independent discontinuous change is a radical change in the existing regime structure, as where the stare terminates the community forest regime, and imposes a state forest regime. In such a case, the formal rules of the community regime are replaced by new formal rules, so change is discontinuous, and there is no role for history as a determinant of the character of the new regime, so it is path-independent. Wars, revolutions, conquest, and natural disasters are the main sources of discontinuous institutional change (North, 1990, p. 89), but such change has been observed in the absence of these factors also. Privatization of a majority of government forests during the early nineties in New Zealand is an example of path-independent discontinuous change.

Institutional change usually comes up against "institutional inertia", which plays a role of a constraint parallel to that of the "organizational inertia" of the EW. Normally, the combination of institutional and organizational inertia limits institutional change to the incremental and path-dependent variety. Only in exceptional cases, when the OE of the LW is extremely high, institutions change in a discontinuous and path-independent way. In certain special cases, such as entry of multinationals or imposition of institutions by foreign rulers, change, although temporally discontinuous and path-independent, will be continuous and path-dependent relative to the prior experience of those organizations newly present on the scene. Analysis of institutional changes which are path-dependent, rather than

just price or market-dependent, calls for efficiency measure different from the neo-classical concept of allocative efficiency applied in that other case.

3.5 Adaptive Efficiency - An Efficiency Measure of Institutional Change

Given the complexity of institutional change, there is no guarantee, nor even a general presumption, that outcomes will systematically be desirable ones. One factor which may help to shape the path of institutional change in positive ways is learning over time by individuals, organizations, and societies and the diffusion of that learning. Societal advance thus depends on the capacity of its institutions to induce learning processes which lead to beneficial institutional change. Institutional arrangements that help a society to acquire knowledge and learning, to induce innovations (e.g. by encouraging such learning mechanisms as trials and experiments), to undertake risk and creative activities, and to resolve problems and bottlenecks contribute to such learning; North (1990, p.80) referred to this quality of institutions as "adaptive efficiency". North also clearly points out that we may not know all the aspects of adaptive efficiency but the institutional structure that allows the trials, experiments, and innovations will be adaptively efficient compared to those structure which does not allow these elements. Similarly, institutional structures that have incentive mechanisms for learning by doing that will lead individual agents to evolve systems gradually different from the existing ones will be adaptively efficient. A similar idea is imbedded in Hayek's (1960) argument that the society that permits the maximum generation of trials will be most likely able to solve its problems through time. Hence, adaptive efficiency encourages the development of decentralized decision making processes that allows societies to maximize the efforts required to explore alternate ways of solving problems (North, 1990). In this process, agents learn from failures and try to eliminate errors. However, these errors may not only be probabilistic, but also systematic, due to ideologies that may give people preferences for the kinds of solutions that are not oriented to adaptive efficiency (North 1990). On other hand, rigid institutional arrangements which leave no scope for these processes will be adaptively inefficient. On the similar lines, institutional changes that are based on the existing norms, behavioral patterns, moral codes will be adaptive efficient while the institutional changes that attempt to replace the existing norms etc. by a formal set of rules that are in-coherent to existing norms will be adaptive inefficient. In other words, complementarity of formal and informal institutions will lead to adaptive efficiency, while non-complementarity to adaptive inefficiency. At this stage it would be difficult or impossible to define a measure of adaptive efficiency in quantitative terms, and thus parallel to static allocative efficiency; we opt instead for a three-point qualitative scale (high, medium, low) in the discussion of Indian forest regimes.

4. THE DYNAMICS OF INDIAN FOREST REGIMES

The colonization of India by the British had a marked impact on forest regimes, such that a logical periodization for our analysis is pre-colonial, colonial, and post-colonial. Though details of the pre-colonial forest regimes are limited, its inclusion

adds continuity and completeness. Both the colonial and the post-colonial periods have two distinct sub-periods, so our history of forest regimes involves five periods in all; their main features are presented in Table 4.1. The above discussion of the LW and the EW is applicable only to the post-colonial democratic period.

Table 4.1. *The Main Features of the Dynamics of the Indian Forest Regimes*

Period	**Pre-colonial**	**Colonial (up to 1864)**	**Colonial (1864-1947)**	**Post-colonial (1947-1980)**	**Post-colonial (1980-2004)**
Dominant Regime(s) and their nature	Community (Informal)	State (Semi-formal) & Community (Informal)	State (Formal)	State (Formal)	State (Formal) & Community (Formal, semi-formal & informal)
Nature of Change of Forest Regimes	Temporal Path-dependent & Continuous	Temporal Path-dependent & Continuous	Spatial Path-dependent & Discontinuous	Temporal Path-dependent & Continuous	Temporal Path-dependent & Continuous
Main Features	1.Absence of Formal Organization 2. Stable External Environment 3.Non-exclusion of Local People Decentralized Institutions	1.Absence of Formal Organization 2.Only Semi-formal State Institutions 3.Non-exclusion of local people	1.Creation of Formal Organization 2.Imposition of Formal and Centralized State Institutions 3.Exclusion of Local People	1.Stable External Environment 2.Centralized State Institutions 3.Exclusion of Local People	1.Social movements, emergence of non-government organizations, and local-level actions 2.Recognition of Decentralized Institutions 3.Inclusion of Local People
Main Factors Contributing to the Regime Dynamics	1. Informal Institutional Inertia	1.External Environment (colonization) 2. Informal Institutional Inertia	1.Organizational Energy 2. Self-reinforcing Mechanisms (Set up costs, learning effects, & limited resistance)	1.Self-reinforcing mechanisms at the LW level (adaptive expectation & set-up costs) 2. Self-reinforcing mechanisms at the EW level (continuation of Indian civil Service & organizational inertia of the forest department)	1.External Environment 2. Organizational Energy of the Legislative Wing 3. Organizational Surges of the Executive Wing
Adaptive Efficiency	Medium	Marginal decrease from the previous period (Medium)	Reduced from the previous period (Low)	No change from the previous period (Low)	Start increasing

4.1 The pre-British Period - Temporal Path-dependence due to Informal Institutional Inertia

In ancient India, learning and culture were mainly seen as a product of hermitage in the solitude of the forests (Mookerji, 1950). Indian epics such as Vedas, Puranas, Ramayana, and Mahabharat thus placed a very high importance on forests. According to Puranas, trees not only provide physical products such as timber and fruits, but also help ancestors to find a way to heaven (Dwivedi, 1980, p.7). The forest dependence of people was institutionalized through a variety of cultural and religious mechanisms such as sacred groves, temple gardens, and worship of some trees. For the people of these local communities, destruction of forests meant the end not only of material items but also of spiritual benefits necessary for eternal life.

The welfare of subjects was a prominent motto of the rulers of this period. As Chanakya (Kautilya's Arthasatra, translated by R. Shamasastry, 1929, p. 38), a revered teacher and the principal adviser to the king Chandra Gupta Maurya, opined: "In the happiness of his subject lies his (the king's) happiness; in their welfare his welfare; whatever pleases himself he shall not consider good, but whatever pleases his subjects he shall consider as good." Chanakya elaborately discussed and suggested (in Arthashastra, written during 325-273 BC) how forest management could contribute to the welfare of the subjects. He created three categories: (i) reserve forests, for the recreational use of the king and to meet the state's needs for construction timber and elephants for defense purposes; (ii) forests donated to eminent Brahmans for religious learning and for the performance of penance; and (iii) forests for the subsistence needs of the public (Dwivedi, 1980, p.9). Though the classification does reflect the existing social hierarchy, it clearly recognized the needs of the public as well as those of the rulers and the elite. The dictums of Chanakya were followed by the Mauryan Empire and continued in practice until at least the 8th century AD (Jha, 1994, p.21). Most of the forests, which were owned by the rulers, except those donated to Brahmans and those reserved for the exclusive use of the state, were under a community regime. Local decision-making decided which trees to use for firewood and other purposes, when to harvest, and how the forest products were distributed among households; decisions were taken in general meetings, rather than by local notables alone. At this point, the territory of post-Independence India consisted of hundreds of relatively small kingdoms and principalities, a fact which implied a smaller distance between ruler and ruled that emerged later.

In medieval India (800 AD to 1526 AD), and especially the subsequent Mughal period (1526-1756), the priority attached to the welfare of subjects declined (Upadhyaya, 1991). The former period saw a gradual trend towards centralization in the sense that the kingdoms became on average larger, through a process of conquest. It also saw an increase in the share of rulers who were non-Indian. Many Sultans, their courtiers, and senior subordinates enjoyed an increasingly luxurious life at the expense of their subjects (Jha, 1994, p.22) and, though the forest area remained adequate--forests were not commercialized and the public was not excluded in principle, direct involvement of the rulers on behalf of the public was reduced. Still, Sultans such as Ala-ud-Din Khalji (1296-1316) showed concern for

public welfare by taking up social amenities programs such as roadside plantations. The Mughal period (1526-1756) saw re-unification and integration of states (Upadhyaya, 1991), and an increase in the importance of forest products due to urban development. There is no record of the Mughal rulers returning to classification-based forest management, but they did lay substantial emphasis on social amenities as well as on trade; large-scale roadside plantations and mulberry block plantations (for the silk trade) were developed during this period, mainly for the benefit of the public. On the whole, the Mughal rulers took a serious attitude to the forests, with the result that a number of forest products were available to fulfil both their needs and those of the public (Jha, 1994, p. 27). But the now-greater centralization of government in the region again tended to distance the rulers from the ruled.

In short, forests were an integral part of life in the pre-British period and forest regimes were governed mainly by conventions reflecting a vision of fair distribution of benefits among all sections of society.[6] Even though, forest land was owned by the rulers, community regimes in forest products, either explicit or implicit, were dominant, and the public's welfare had a considerable though declining weight. Even under the non-Indian rulers of the medieval and Mughal periods the forest regimes did not come into enough conflict with the social structure to force it to change. Their dominant feature remained the community-based informal institutions, and "informal institutional inertia" due to the embeddedness of forest regimes in other social institutions contributed to the path-dependence (here, continuity) of forest regimes during this period. There were no formal organizations dedicated exclusively to forest management, and hence the contribution of organizational factors to institutional dynamics was minimal. The forest regimes (informal institutions) were by nature decentralized; local people were the forest managers and decision makers, and they had the freedom to experiment, learn from failures, and make changes to the existing institutional arrangement. Hence, we judge the adaptive efficiency during this period to have been at least at the medium-level[7].

4.2 The First Forest Policy Phase of the British Period (Up to 1864) - Path-Dependence due to Informal Institutional Inertia and Lack of Organizational Energy

The British brought to India an attitude towards forests based on their own specific history of drawing down their own forest resources as well as those of Ireland, southern Africa, and the north-eastern United States to obtain timber for shipbuilding and iron smelting, and to get land for agriculture (Guha, 1996). Troops and settlers in seventeenth-century Ireland had cleared forests to deny cover to Irish rebels (Rangarajan, 1996, p.16). Throughout the seventeenth and eighteenth centuries, forest dwellers in England were locked in struggles with Crown officials and landlords over control of forestlands (Thomas, 1983, pp.194-195). The agenda of "agrarian progress" led to the breaking-up of the common tenurial system in Ireland and the Scottish highlands (Bayly, 1989, pp.123-4). Soon after their arrival in India, the British rulers extended land under cultivation as a way of consolidating their control, and sought military advantage against their foes by denuding the

countryside (Rangarajan, 1996, p.17). Extension of agriculture and strategic denudation were of course not new to India (Pouchepadass, 1995); the British only increased the pace of these processes, and the objective of forest conversion to agricultural land became revenue-generation rather than the subsistence needs of the local people, as in ancient India. A very significant new pressure came from the contemporary strategic and commercial imperatives of the British empire (Rangarajan, 1996, p. 19). The shortage of timber in Britain, and the isolation of Britain from the Baltic supply lines during the Revolutionary and Napoleonic wars between 1793 and 1815 forced the empire to look to alternative sources of wood for shipbuilding. In the late eighteenth and early nineteenth centuries Indian forests were mainly used by the British to meet the requirements of the Royal Navy, on whom the safety of empire depended (Smythies, 1925 cited in Guha, 1983)). In the middle of the nineteenth century, after the Indian mutiny in 1857, a strategic priority of the empire became rapid troop movement within India. On the commercial front, expanding imperial trade was high on the agenda. To meet these strategic and commercial objectives the British began construction of a huge Indian Railways network, and the railway ties (sleepers) came from the Indian forests.

In summary, during this first phase of British rule forest regimes aimed to secure economic, political, and strategic advantages for the empire. Since forest resources were understood to be inexhaustible, local users were not in principle excluded from the resource. Some new semi-formal institutions were introduced by the British, while the informal institutions of local communities continued to exist except in a few cases where they gave way in the face of large scale harvesting by the rulers. The dynamics of forest regimes were mainly influenced by the external setting (colonization) and by the rulers' strategic and economic considerations. The lack of formal forest organizations, and therefore of forest-specific organizational energy, together with informal institutional inertia due to embeddedness in the social structure contributed to the path-dependant continuation of informal decentralized community regimes. There may have been some decrease in adaptive efficiency due to the introduction of semi-formal institutions and shift of control to the new rulers, but in the community regimes it continued to be the same as in the pre-British period.

4.3 The Second Forest Policy Phase of the British Period (1864 – 1947): Spatial Path-Dependence (or Temporal Discontinuous Path) due to Organizational Energy and Self-reinforcing Mechanisms (Positive Feedback)

Forest degradation, due to the reckless harvesting practices of the first phase of British rule (Pearson, 1969), eventually forced the colonial authorities to recognize that Indian forests were not inexhaustible. Scattered steps were taken early in the nineteenth century to ensure the timber supply for shipbuilding, but only in 1862 did the Governor General call for the establishment of a forest department to ensure the sustained satisfaction of the enormous demand for railway sleepers (Webber, 1902, cited in Guha, 1983). That department's creation in 1864 signaled a new phase, characterized by state control and the increasing exclusion of local people from

forest use. The first Forest Act of 1865 empowered the state to declare any land covered with trees or brushwood as government forest and to set the rules for its management. At this point the government's right was still subject to the condition that it not abridges the existing rights of the local people. Mr. Dietrich Brandis, the first Inspector General of Forests, came from Germany, the leading European nation in forest management, and was sensitive to such existing reflections of indigenous Indian forestry as the sacred groves and the frequently competent management by the Indian rulers. He argued for a parallel system of communal forests for village use, separate from the state forests. But Mr. B.H.Baden-Powell (the British head of the revenue department) advocated total state control over all forest areas as the only check on individual self-interest and short-sightedness (Guha, 1996). Baden-Powell's view prevailed, leading to the 1878 Indian Forest Act, which put restrictions on the public's access to forestland and produce. Though the Act did countenance the provision of village forests, this option was exercised only in a few isolated cases (Guha, 1996). The first general statement of forest policy by the British Government (in 1894) further weakened local rights, as reflected in a shift of terminology away from traditional "rights" to "rights and privileges"[8]. The policy emphasised the need for state control and use of forests to augment government revenue. The reserve forest area was expanded at the expense of that allocated to villagers' use (Guha and Gadgil, 1989). Though the British defended their changes in terms of efficiency, arguing that well defined property rights would increase production, in practice these steps were less about clarification than about abolishing the rights of local people established through conventions developed over long periods of time. The new regime not only entailed the predictable welfare losses to the people, but also had negative efficiency implications due to the high transactions costs involved in excluding them.

The Indian Forest Act of 1927 incorporated the main features of the National Forest Policy of 1894, empowering the government to declare any piece of land to be state forest and recognizing only the rights and privileges of persons--not of communities. The shift from indigenous management systems to state control of forests incorporated in these two documents has been identified by some observers as the first step towards forest conservation or scientific management (Tucker, 1988). The preparation of management plans (referred to as 'Working Plans') was initiated on a major scale in 1884, and large forest areas in many provinces such as United Provinces, Central Provinces, Madras and Bombay Presidencies were brought under such plans (FRI, 1961b, pp. 91-97). The increased degree of scientific (silvicultural) professionalism of the forest service was also evident from problem-specific efforts such as the regeneration of Sal forests in early 1920s (Tucker, 1988). However, the basic principle of the working plans - sustained yield management - and other silvicultural principles were frequently superseded in the economic, political, and strategic interests of the empire, especially during the two World Wars. In World War I approximately 1.7 million cubic meters (mostly teak) were exported annually and the indigenous resin industry proved to be a great boon at a time when American and French supplies were unavailable (Guha, 1983). The Second World War saw an even more extreme "mining" of the Indian Forests. Timber management

was placed on an emergency basis, with supplies and prices of timber strictly controlled by the Wartime Mobilization Board and the Forest Department (GOI, 1944). During this period, no management plans were followed, the only limit to harvesting was the supply of labor, and fellings were estimated to be six times annual yields (GOI, 1948). There is similar evidence of profligacy with respect to hunting practices. The new laws restricted small-scale hunting by tribal peoples but continued to facilitate large-scale hunting by whites[9].

To implement and manage its new forest regimes, the colonial government had created a large bureaucracy--the forest department. Mr. Brandis, the first Inspector General of Forests, was responsible for its establishment, including the forest service, forest training, and research. This German botanist recommended the selection of Imperial Forest Service officers from Europe and their training there. He was of the view that:

> "Attention should particularly be paid to scientific requirements, especially in natural sciences, and they should be competent to survey a forest and to plan and construct forest roads. Although climate and vegetation in India are different, yet the fundamental principles of forest management are the same everywhere and persons, whose practical experience is supplemented by scientific education will be able to apply these principles in the forests of another country" (FRI, 1961a, p. 105).

Although he did recognize some of the merits of community involvement in forest management, Brandis only went so far. While appreciating the social, cultural, and economic setting of local user groups, he failed to incorporate it in the formal forest regime (forest policy, forest law, structure of the forest department, training of forest officers, and forest research). While the officers were being trained in Europe, preparation of subordinate staff began in 1878 at the Central Forest School at Dehradun. In 1926 the training of forest officers was started at the Indian Forest College, Dehradun; this and later Indian schools were headed and managed by European specialists. The main objective of the training was to provide basic skills in engineering and natural sciences to fulfill the empire's demands from Indian forests; social science inputs were totally missing from the programs. This lacuna contributed to the isolation of forest officers from local communities, and also to their belief that local communities could not manage forest resources efficiently.

A Forest Research Institute was created at Dehradun in 1906. It was to become the colonial world's premier research station and the model for later centres in Britain's tropical colonies (Tucker, 1988). Its main objective was to provide support to the economic, political, and strategic interests of the empire. In the early twentieth century this meant the antiseptic treatment of inferior timber species for use as railway sleepers, which made the use of chir and blue pines possible on a commercial scale in 1912, and in the following year led to the reserving of extensive pine forests (Guha, 1983). Another research area was the industrial uses of Minor Forest Products (MFPs), for such items as resin and turpentine, kutha, myrobolans, and essential oils. India was the only source in the empire for these products, and their export contributed greatly to empire revenues (Guha, 1983). During the Second World War, forest research was dedicated to finding new substitutes for valuable species that were no longer available, thus promoting the harvesting of those species still left in the forests.

The colonial forest regime influenced the attitude of those princely state rulers who had maintained their own identity under British rule and who still administered about half of Indian territory. They observed the commercial benefits from forests enjoyed by the British, and started leasing forest tracts to the latter. Later some of them appointed their own forest officers, trained in colonial institutes together with the Imperial Forest Service officers, to manage their tracts. Revenue generation became the main objective of forest management in these states as well, and brought with it a similar exclusion of local people.

The progressive diminution of rights and the consequent loss of control over their forest resources evoked a sharp reaction from some forest communities against both the British government and the local rulers, as witness the Rampa rebellion of 1879-80 in Andhra Pradesh, the 1918 militant revolt by Santhals in Midnapur district of the Bengal Presidency, the 1916 and 1921 social movements in Uttar Pradesh Himalayas, and the 1940 revolt by the Gonds and Kolams tribes in the Adilabad district of Hyderabad (Guha and Gadgil, 1989). The milder rebellions were crushed by the British, but their response to some of the stronger, more protracted ones was to yield to local demands, as in the Uttar Pradesh hills where, in the 1920s, the concept of Van Panchayat—a community based forest management system, was accepted and forest areas were identified for management by local people. Similarly, Forest Co-operatives were established in Himachal Pradesh. In some cases, instead of handing over the forest to communities, arrangements were designed to provide land for agricultural crops by adopting agro-silvicultural systems such as Taungya.

In summary, in this second phase the British rulers sought to and largely succeeded in displacing all prevailing concepts of societal rights to forest-based benefits with the objective of maximizing the economic gains to the empire--industrial development in Britain and expansion of the colonial foundation in India. In other words, this was the period of an extension of the concept of the "state" of the British empire to forest resources of India[10]. The establishment of a formal forestry organization, exclusion of people from forest use, and the superposition of the formal state forestry institutions over the informal community institutions were the main features. The prior British experience of forest exploitation for military and agricultural purposes, and of establishing private property rights, contributed to the "organizational energy" needed to dismantle the existing informal forestry institutions in India. The principle of private property rights - exclusion of all people except the owner - was applied in a modified form in which instead of individuals those rights resided in the state. In the beginning, therefore, it was the experience picked up elsewhere that encouraged the shift towards exclusionary forest regimes. What constituted a discontinuous change of regime in India was at the same time part of a pattern of path-dependence within British-ruled territories. However, once the British had introduced these regimes in India, the initial set-up costs, learning effects from the experience in India itself, limited resistance by Indian people in most of the areas, and increased demands that the forests meet the empire's strategic, political, and economic needs, contributed to positive feedbacks, and worked as self-reinforcing mechanisms. These feedbacks, further strengthened by the existing research and training activities, resulted in a step-by-step reinforcement of the

exclusion of local communities in every subsequent forest act/policy statement between 1864 and 1947. In a few specific situations, such as Van Panchyats of UP and the Forest Cooperative of Himachal Pradesh, strong opposition from local elements forced the new formal institutions to incorporate features of the pre-existing informal ones.

Overall, however, in the process of centralization and formalization of forestry institutions, the elements of adaptive efficiency present in the forest regimes prior to the colonization were attenuated. Trial and error, experiments, and corrections were now limited to the departmental research laboratories alone, and were based only on departmental perspective. These experiments were also limited to the technological aspects of forestry, with the institutional aspects left out. There was no role for the communities, no experimentation at the local level, no lessons learned from communities, and success was not judged from a community perspective. Local communities were not free to modify the centralized institutional arrangements at their level to best meet local requirements. In conclusion, adaptive efficiency of forest regimes was lower than that during the pre-British period.

4.4 The First Forest Policy Phase of Independent India (1947-1980): Temporal Path-Dependence due to Organizational Inertia of the LW and the EW and Formal Institutional Inertia

The 1894 Colonial Forest Policy provided the basis for independent India's first (1952) forest policy; the fundamental idea of that earlier approach--that the state should administer the forests, was presumed to hold good. Formally the new policy recognized the protective, ecological, and societal values of forests as sources of social welfare. However, such recognition at the top institutional (forest policy) level did not translate into the changes needed at the lower level institutions (the Indian Forest Act and other down-the-line operating rules). *De facto*, the perceived national interest was given priority over local village interests and the former was interpreted in a very narrow sense which gave little weight to avoiding the destruction of forests. In extinguishing local rights, the new Indian government continued along the British path, bringing more and more forests under state control. After independence, the princely states were formally brought under Indian forest law. State control was also extended to include the power to regulate the collection of grass and other forest products in village forests, to prescribe their management practices, and to take up direct management of private forests (Alcorn and Molnar, 1996).

The major difference vis a vis the colonial period was that, whereas the British used the forests to promote the industrialization of Britain (a goal which, *inter alia*, called for the construction of the Indian rail network), the states of independent India engaged in a sort of competition to provide low-cost raw material to forest based industries such as pulp and paper in order to attract those industries to locate in their region. The idea of forest production as a commercial activity gained ground. Although commercialization and industrialization were only accorded secondary importance in the 1952 policy statement, in fact India's heavy emphasis on industrial

development was a prime determinant of forest history over the next few decades. This contradiction between the policy, in which other goals were reasonably prominent, and operations at the forest management level, where they were not, reflects the fact that changes in the first level institutions (forest policy) did not trickle down to the lower-levels of operational rules, an example of "formal institutional inertia".

In 1970, the Government of India appointed a National Commission on Agriculture (NCA) to examine and make recommendations for improvement and modernization of that sector. Since forestry was still lodged administratively in the Ministry of Agriculture, it was included in the mandate of this commission. An accident of administrative structure thus implied that forestry policy would be set by way of a report on agriculture. The commission's terms of reference included a very general charge, together with a list of twenty-four specific items, of which only one dealt with forestry (GOI, 1976a). Though committees were constituted for each item and sub-item with experts in the respective fields, none of the NCA's Chairman, Secretary, or five full-time members was a forestry expert, and only one of ten part-time members was. Nonetheless, the NCA report resulted in a second round of major changes in the forest policy of independent India. It emphasized that production of industrial wood should be economically defensible in terms of cost and returns. This led to large-scale plantations of fast growing tree species, which replaced the existing slow-growing native (so-called inferior) species. Though the commission argued for economic efficiency (achieving good value of outputs relative to value of inputs), the resulting decisions focused only on technical efficiency (good ratio of physical outputs to physical inputs); price efficiency (making sure that output and input combinations duly reflected output and input prices) was never a criterion for these new plantation activities. In fact this state activity was plagued by numerous economic distortions, including supply of raw material to industries at subsidized prices and adoption of harvesting rotations based on purely silvicultural rather than economic criteria. There may have been some gains in the production of industrial wood, but the conversion of natural forests to industrial plantations has been highly criticized for its environmental costs. The NCA recommended a new organizational structure to manage these commercial activities on business principles and to attract institutional finance (GOI, 1976b). In response, Forest Development Corporations were set up in almost all states; they were, however, manned by forest officers rather than business managers. Although the NCA foresaw this problem and recommended the training of forest managers in business management skills, the establishment of an institute to impart these skills took almost two decades--a good example of organizational and formal institutional inertia, and when the first batch of graduates emerged there were no openings for them in the forest corporations, a reflection of "attitudinal inertia" in those organizations.

The NCA accepted the British presumption that free access by local populations would lead to the destruction of the forests, and recommended instead a National Social Forestry Program to meet the fuel, fodder, and small timber requirements of rural people through plantations on non-forest lands (GOI, 1976b). In the late seventies and eighties, social forestry programs were started in many states, Gujarat

and Uttar Pradesh being the pioneers. Foresters and donor agencies promoted fast-growing species for large and fast biomass production irrespective of their fuel wood or fodder qualities. Ironically, when the product was found wanting by the villagers, the output of the social forestry program wound up contributing raw material to industry (Chowdhry, 1989). In many cases poor people were actually hurt by the conversion of common lands to these plantations. A program of free distribution of seedlings also benefited the big farmers and industrial units that took up plantation activities. Though the Social Forestry Program was supposed to benefit poor people, at best only marginal trickle-down effects reached them; distributional disparities probably increased rather than being reduced. The foresters lacked the initiative (through "attitudinal" and "cultural" inertia) needed to make the shift from a forest department program to a more people-oriented one.

During this period, the focus of training and research, like the overall policy orientation and the basic organizational structure of the forest department, remained essentially unchanged, though facilities were extended. The course curriculum, studied by the Indian Forest Service (and other) officers, was a carry-over from the British period. Though the nomenclature of positions was changed for Social Forestry projects, and some state level training institutions were set up to meet those projects' staffing needs, the curriculum and mode of training remained the same as in the other training institutes. On the research front, though many new centers were started by the central and state governments, including some attention to social forestry, the main focus remained silviculture and forest products.

In summary, in spite of the natural redefinition of forest policy objectives in terms of the national welfare, the first four decades of independent democratic India saw almost no significant institutional change either of a general character or with respect to the inclusion of communities. Forest-dependent groups were hoping and expecting that an independent Indian government would address their forest requirements more seriously. This optimism on their part bred a patience which contributed to stability in the external social setting for policy. The national focus on economic development through industrialization, which was supported by forest policies of international organizations such as FAO[11], facilitated continuity. As illustrated in the above discussion, “formal institutional inertia” and “organizational inertia” were the main elements underlying that continuity, with many self-reinforcing mechanisms contributing to the “organizational inertia**”.**

In the case of the LW, the main mechanism was the adaptive expectations [12] of the members of the LW based on existing organizations and beliefs, and fuelled by the forest managers trained mainly in natural sciences such as forest botany, silviculture, and forest management.[13] Though the function of forestry organizations had supposedly been changed from "channeling goods and services to the empire" to "provision of goods and services to the population", adaptive expectations impeded recognition of the inappropriateness of the existing forestry organization to the new objective. Also impeding change at this level was the expectation of large imminent payoffs from the existing forestry (institutions and organization) system. During the last phase of British rule, while local populations were being excluded from the forests, large investments were made in the design and establishment of the new

forestry institutions (state system) and in forestry organization, in terms of notification of reserve forests, settlement of the rights of local people, training of forest managers, and forest research. The dismantling of the previous forest regimes and organizations and their replacement had involved significant costs, from which the Indian government did not expect a commensurate payoff.

At the EW level, the first self-reinforcing mechanism was the continuation without significant alteration of the Indian Civil Service (now known as the Indian Administrative Service, IAS), a most powerful organization. It has wielded a strong influence over policy formulation, in many cases overriding the wishes of local people represented through their elected representatives. The "attitudinal inertia" of the members of this service, generated through their experience under British rule, impeded changes to the forest regimes designed under British rule. The forest managers, who had been trained to benefit the empire by excluding the local population, suffered a similar case of “attitudinal inertia”. Meanwhile, the forest department suffered from "cultural inertia" also. Since the forest officers, trained under the British Empire, were responsible for training new recruits, their views tended to be imparted to the latter; this tendency was heightened by the typically military style of the training programs. Along with training in technical subjects came a heavy dose of organizational culture, within which it was inappropriate for a junior officer to disagree openly with the decision of a senior, even if convinced that it was completely incorrect. New officers inherited not only the colonial thinking about forest regimes, but also a perceived self-interest in managing the forests for the state, not for the local communities. Having developed the rulers' habit of treating the public as serfs, they found the role of servant to society in an independent country a long stretch. Finally, the "structural inertia" of the forest department may have been increased, at least marginally, by the addition of several new levels to its hierarchy. Hence, all three components - attitudinal, cultural, and structural, contributed to an "organizational inertia" in the forest department that strongly resisted any departures from the existing forest management practices.

As with the forest regimes prior to independence, there were no built-in mechanisms or provisions for institutional experiments, innovations, adaptations, or inclusion of communities in the learning process; learning was limited to the technological aspects of forestry, through departmental laboratories. Hence the adaptive efficiency of forest regimes remained at the same (low) as prior to independence.

4.5 The Second Phase of Independent India (1980-2004): Dominance of the External Setting, Organizational Energy of the LW, and Organizational Surges in the EW

The period 1980-2004 differs markedly from the previous one. Even though several important processes had started in seventies, their main effects were felt in the eighties. Swami Chidanandji, a spiritual leader who attended The United Nations Conference on the Human Environment held in Stockholm, 1972, launched a movement for community forest rights in the Himalayan region, where the Sarvodaya (Brotherhood) spirit created by Sarala Behn, a disciple of Mahatma

Gandhi, was already prevalent; it later came to be known as the Chipko (hugging the trees) movement (Bahuguna, 1987). In response to the long struggle of these hill villagers, Gandhian leaders like Jayaprakash Narayan and Kaka Kelekar, and ecologists like Salim Ali made an appeal to stop tree felling in the Himalayas (Bahuguna, 1987). All the major political parties included protection of the environment in their 1980 election manifestos. In March of that year the World Conservation Strategy, an international outcome of the Stockholm conference, was launched in New Delhi under the leadership of Prime Minister Indira Gandhi. In April Mrs Gandhi invited Chipko leaders for a discussion of their demands. As a follow-up to these discussions and to the launching of the World Conservation Strategy, the Government of India brought in the Forest Conservation Act of 1980, which put strict legal restrictions on the conversion of forestland to non-forestry purposes and placed responsibility for decisions on such transfers under the direct control of the central government. A Himalayan region ban on the felling of green trees for commercial purposes at altitudes above 1000 meters followed in April 1981. In 1982 the Centre for Science and Environment (CSE) published The State of India's Environment - 1982, which provided an environmental blueprint dealing, *inter alia*, with the forests. In 1982, the Society for Promotion of Wasteland Development (SPWD), a national non-governmental organization, was established. After replacing his mother on her death, Rajeev Gandhi in 1985 recognized the importance of forests by creating a separate Ministry of Environment and Forest, and acknowledged the significant role of non-government organizations in forestry by constituting the National Wasteland Development Board to bring wasteland under production through a peoples' program. The first chairperson of the latter board was Mrs. (Dr.) Kamala Choudhry, also the chairperson of the SPWD. The key role of NGOs was thereby formalized at the highest level, and they became part of the decision making process. In 1989, Mrs. Menaka Gandhi, an environmentalist, became the Minister of Forests and Environment and strengthened the role of NGOs in forest policy decision-making.

The impact of these evolving environmental, social, and political factors has been complemented by that of population pressure on the forests, which has risen dramatically since independence. Over the period 1901-1951, India's population increased from 238 million to 361 million (at an annual growth rate of 0.84%); after independence, it increased to 846 million in 1991, at a rate of 2.15% per year. The resulting pressure by local people on the forests accentuated the conflict between the formal institutions of forest management and the local, informal institutions of user groups. Local communities reacted to growing scarcities of forest products with forest protection activities; in the late 1970s and early 1980s, initiatives of this sort sprung up in thousands of villages all over the country (especially in Bihar, Orissa, Madhya Pradesh, and Gujarat). By the 1980s many local communities were challenging the authority of forest officials and their management systems. Environmental groups and non-governmental organizations emerged as new power centers with strong bargaining positions, and used the political system and public awareness to challenge the existing forest regimes. Politicians, including the Prime Minister and the Forest Minister, supported the inclusion of NGOs and other public

groups in policy making. In isolated cases, bold and innovative forest officers also supported the cause of local people by involving them in forest management, against the traditional legal practices.

With these inputs and under the above pressures the government finally accepted (at least in principle) the failure of forest regimes which excluded local people. The second (1988) forest policy of independent India is a clear departure from the earlier (1952) one in terms of the rights accorded to local poor people, specifically tribals and scheduled castes, which take priority over all other rights to forests such as those of industries looking for raw material. It emphasizes that customary rights and concession holders should be motivated to identify themselves with the protection and development of the forests from which they derive benefits. Following the 1988 Forest Policy, the Government of India in June 1990 issued detailed directions to state governments for the design of forest management programs in collaboration with local people--now known as Joint Forest Management (JFM). For the first time in independent India, a new policy was followed by detailed guidelines to transform changes at the policy-level into the corresponding changes at the lower-level operational rules. By late 1998, 20 state governments had also issued enabling orders on JFM, the next lower level of operational rules, and around 21,000 Forest Protection Committees were managing about 2.5 million hectares of forests (Thomas, 1998). Depending on the origin of these forest protection committees, some forest areas are under community regimes (though the ownership of land remains vested in the state)[14] while others are under joint regimes. Forest communities and forest departments are now working in close collaboration to develop forest regimes based on the principle of partnership. Despite this return towards community-based forest regimes, state regimes remain important and still account for a majority of total forest area.

On the training front, Rajeev Gandhi intervened personally in 1985 to initiate one-week refresher courses for members of all India's Services, including the Forest Service. Courses for the latter group were aimed at providing exposure to aspects of forest management beyond the traditional technical inputs. Unfortunately, their impact was quite limited; they were provided only to officers of the Indian Forest Service and their brevity contributed to their frequently being viewed as short vacations at government expense. However, the new forest policy in 1988 together with the emergence of joint forest management did bring some remarkable changes in training and forest research. In the JFM states, training of forest officers and subordinate staff in participatory management tools has been started with the support of NGOs. Some social science and management institutions have also initiated training courses for forest officers in different aspects of social and management sciences. Many research centers other than the traditional forest research institutes have begun to study a variety of matters related to joint forest management, such as ecological, economic, institutional, and gender issues. During the evolution of JFM, some funding agencies (especially the Ford Foundation), have played the role of catalyst by organizing national workshops for sharing the ideas and supporting the research and training initiatives.

In summary, the external setting, the "organizational energy" of the LW coming from individual leaders, and the "organizational surges" of the EW are the main factors that contributed to the important forest regime changes during this period. Social movements like Chipko, emergence of non-government organizations, and local-level initiatives from user groups, together with the external factors like the UN conference were among the pressures for change. In addition, a new development paradigm, based on decentralization and people's participation, also gained popularity during this period, and found global acceptance, including institutions of the United Nations system and the World Bank (IADB, 1991; World Bank, 1991). Hence, global trends in decentralization fully supported the changes in forest regimes. The two Prime Ministers - Mrs. Indira Gandhi and Mr. Rajiv Gandhi - and the Forest Minister - Mrs. Menka Gandhi, contributed to the "organizational energy" of the LW. The local-level experiments by some forest officers contributed to the "organizational surges" of the EW. All these factors together were able to overcome to some extent the organizational inertia of the FD and the institutional inertia of the existing forest regimes, resulting in institutional changes that may appear sharp and discontinuous. Nevertheless several considerations incline us to describe the process as incremental. First, the idea of involving the communities in forest management is not new, community regimes having existed at least in isolated cases throughout India's forest history. The social forestry program was started in the seventies; there was a modest de-facto shift towards community regimes even before the 1988 policy was enunciated. Finally, the 1988 policy has of course not converted all state regimes into community regimes. Effects of the 1988 policy like the changing attitudes of some forest officers towards community involvement in forest management appear revolutionary, but have not been general and have not occurred overnight. They are the outcome of a continuous process of criticism of forest officers by the general public, an increasing role of non-government organizations in bringing the forest department's anti-people attitude to the forefront, and the experimentation and learning of some daring and innovative forest officials. There are thus more elements of continuous incremental change than of revolutionary transformation. In addition, at the operational-divisional level, the transformation of state regimes to community or joint regimes is still dependent on the perceptions and attitudes of the local forest officer, and here the pattern of path-dependent incremental change is particularly apparent.

One important development since the 1988 Forest Policy seems to be the emphasis on adaptive efficiency. The behavior of both the forest department and the local communities suggest that a process of positive adaptation is underway. It rests on the willingness of the department and the communities to acquire knowledge and learning, to introduce innovations, to undertake risks and creative activities of all sorts, and to resolve problems and bottlenecks as they emerge. The apparent origin of the new (joint) forest regime is the risky innovations adopted by some Divisional Forest Officers (DFOs) in the state of West Bengal--risky both in the sense that they were experimental --hence their effects could not be predicted, and in the sense that the DFOs could have been reprimanded or punished for this deviation from standard departmental practice. In Purulia district in 1972 a new DFO faced immense

pressure from illegal harvesting of the forests by local communities. Initially he worked with the state police officers to raid villages and local fuel wood market centers and to arrest fuel woodcutters, but this created considerable unrest in the area and tension between the forest officials on the one side and the local people and politicians on the other. He responded by suggesting to the communities that they take on protection responsibilities in return for a share of the fuel wood and minor forest products. In another area of south-west Bengal, Arabari, the local DFO[15] offered a 25% share of the sal timber and rights to all non-timber forest products including leaves, medicinal plants, fiber and fodder grasses, mushrooms and fruits in return for forest protection by communities (Poffenberger, McGean, & Khare, 1996). These were daring moves by the DFOs since they lacked legal authority to venture into such partnership programs. When it later came to formalization of the new joint management regimes, the different states developed a variety of provisions, in consultation with non-government organizations, defining the categories of forests to be covered, the participants from the community, the management unit, the representation of different sectors in the executive committee, the power of the committee, the benefit-sharing arrangements, etc. It was felt that the reorientation and training of forest officers was perhaps the key to the attitudinal and institutional changes necessary to support JFM over the long-term. The forest departments have been very receptive to this idea. Social learning and local innovations by community members and forest officials are also contributing to the adaptive efficiency of the new regimes. In 1994, consultations between the DFO of Harda Forest Division, Madhya Pradesh, and the local communities of Malpone village resulted in an innovative management plan that focused on nested silvicultural prescriptions (i.e. prescriptions consistent with the local socio-economic and cultural milieu), dividing the forest and its management both by species and by canopy tiers (Campbell & Rathore, 1995). In such exercises, community members and forest officials together develop ways of combining traditional knowledge and modern scientific methods of forest management. Forest officers have learned a variety of "ethno-silvicultural" techniques such as seed sowing in Euphorbia bushes by drawing on the indigenous knowledge base (Campbell & Rathore, 1995). The local communities also search for answers to the various challenges confronting joint regimes, such as convincing other people to join and achieving an equitable distribution of benefits. When some herdsmen in Badagorada village of Orissa let their cattle graze in nearby forests, four school teachers and 150 students from the local school went to the village and lay prostrate in front of the herdsmen's houses. The latter apologized and promised not to repeat the offence (Kant et al., 1991). Such examples indicate that the adaptive efficiency of the forest regimes has been improving during this period, and should in the near future surpass the level of adaptive efficiency of the pre-colonial period.

5. OUTCOMES OF SHIFTS TOWARDS COMMUNITY-BASED FOREST REGIMES

Overall outcomes of community-based forest regimes, created from 1988 on, have been encouraging. Country level quantitative data on the impacts of these new forest regimes are not available, but an observed decrease in the rate of deforestation and an expansion of dense forest area (crown density equal or more than 40%) during the last decade point to a positive impact from this innovation. During the period from 1961 to 1987, forest area decreased from 783,962 sq km to 642,041 sq km while in the period 1987 to 1995, it declined only to 639,600 sq km (GOI, 1988 & 1996); the annual rate of deforestation was cut to 0.05% in the latter period from 0.78% in the former. In addition, dense forest area has been continuously increasing since 1987, from 361,412 sq km in 1987 to 385,756 in 1995 (GOI, 1996), an annual increase of 0.82%. Our belief that the shift to community-based regimes has been a major contributor to these outcomes is supported by numerous micro-level studies showing multi-dimensional positive impacts of community based regimes. For example, in the three districts - Bankura, Midnapore, and Purulia - of the Southwest Bengal, where large-scale community-based forest management systems were initiated in the early 1980s, forest cover increased from 14.94% in 1984 to 17.96% in 1988, and further to 19.22% in 1991 (Pattnaik & Dutta, 1997). Lal, Bahuguna, Uddin, & Hussain, (1995) observed substantial improvement in biodiversity and regeneration in forest areas under community -based forest management systems of Bankura district. Similarly, in the Jamboni range of Midnapore district, biodiversity increased by almost four times in forest areas under community-based regimes (Poffenberger & McGean, 1996). Within a period of 3 years of the initiation of community- based regimes, annual household returns from non-timber forest products increased by 200% in many villages of Midnapore district (Malhotra & Poffenberger, 1989). These returns from non-timber forest products have not only increased the total income of the households but have also decreased income disparities between rich and poor people (Kant, Nautiyal, & Berry, 1996). In Andhra Pradesh, degraded Teak forest areas been brought under joint forest management systems have responded favorably, and the concerned forest protection committees received an extra income of Rs30,000 ($750) to Rs75,000 ($1600) from the teak billets in Rajamundary Forest Circle (Mukerjee, 1997). In the Budhikhamari area of Orissa, production of Sal (Shorea robusta) seeds increased by five times in the five-year period of community based forest management regimes (Mishra, 1994).

6. POLICY IMPLICATIONS

The main feature of the evolution of forest regimes in India has been incremental path-dependent change, the main exception being the sudden shift from the dominance of community regimes in the pre-British period to that of state regimes in the British period. The dominant factors in this pattern of incremental change have varied markedly over time. In pre-colonial India the inertia of the informal institutions played a major role. In colonial India, the first major force for change was the “organizational energy” which dismantled the existing institutions. But, later

many self-reinforcing mechanisms such as initial set-up costs, learning effects, and limited resistance contributed to path-dependent changes. In post-colonial India, first self-reinforcing mechanisms at the level of the LW such as adaptive expectations and large set-up costs, and "organizational inertia" of EW dominated the process of institutional change. But, later the organizational energy of the LW, the external setting, and organizational surges of the EW became dominant. The level of adaptive efficiency varied directly with the degree of decentralization of forest regimes – higher in the decentralized regimes of pre-British India and recent regimes and lower in the centralized regimes in British India and the first phase of post-colonial India.

Such features of forest regimes, and the outcomes of the post-1988 experience, suggest a number of implications for forest management in countries whose forest histories have considerable in common with India's. First, neither the traditional political-economy framework nor the new institutional economics provide an adequate base for the analysis of forest regimes; organizations, institutions, external setting and their interaction have to be included in a more explicit way. Second, the design of forest regimes should take account of path-dependency and associated factors, since this is so manifestly present in most actual experiences. Third, the concept of adaptive efficiency is central to the evaluation of the institutions and organizations constituting forest regimes. Fourth, the concept of property rights, as applied in neoclassical economics, is not sufficiently subtle to explain the success or failure of forest regimes. In India, the British began the process of defining property rights from 1865; by the first Indian Forest Act of 1927 those rights were clearly laid out. But, the results were unsatisfactory, mainly because of non-complementarities between formal and informal institutions which led to adaptive inefficiency. Well-defined property rights have been less important than adaptive efficiency of the forest regimes. Fifth, outcomes of forest regime changes depend on the process of implementation, which is highly sensitive to the perceptions of members of forestry organization and organizational culture. "Organizational inertia" has been one of the main factors impeding institutional changes towards adaptive efficiency in India. Institutional change alone, without complementary change in the attitude of members of forestry organizations and organizational culture, will not provide the desired results. As a result, policy and management prescriptions for sustainable forest management, in these countries, should address institutional and organizational aspects in an integrative manner.

NOTES

[1] North (1990) is an exception. However, his discussion is in the context of an economic and not a state organization, and his focus is on the stock of knowledge and investment and not on organizational inertia discussed in this paper.

[2] These include Bahuguna 1982, 1987; Bhatt 1988; Corbridge & Jewitt, 1997; Gadgil & Guha, 1992, 1994, 1995; Guha, 1983, 1986, 1989; Guha & Gadgil, 1989; Jewitt, 1995; Nadkarni, Pasa, & Prabhakar, 1989; Pathak, 1994; Pouchepadass, 1995; Rangan, 1995, 1997; Shiva, 1989, 1991; Shiva & Bandyopadhyay, 1986; and Vira, 1995.

[3] Vira (1995) included the forest bureaucracy as one of the forest-dependent groups in his schema, but the role of a central organization, the forest department, in the dynamics of forest regimes has not been

addressed adequately.

[4] Please refer to Section 3.4 for a discussion of path-dependent incremental changes.

[5] In this hierarchical categorization, the legal distinction between acts, orders, and guidelines is not our concern. In the court of law, a government order that is in contravention of the existing forest act may not be sustained. But if the executive branch of government, which is presumably aware of the act, issues an order that contravenes it, this is likely to mean that it wants to change the existing law. Such anomalies, and the possible conflict to which they may give rise, can occur when amending an act is a lengthy process. Eventually such amendments bring the act into line with the new orders of the government.

[6] The concept of "fairness" involves, inevitably, a degree of subjectivity. In this case the distribution of benefits was fair to the less advantaged groups in the sense that it did make provision for everyone's receiving certain benefits (in particular firewood and some other forest products), and in the sense that it was generally perceived as fair by the affected groups.

[7] Scholars have substantially divergent views about certain aspects of forest regimes in the pre-British period. Gadgil, Guha, and Shiva focus on community-regimes and argue that communities were aware of environmental issues and of the scarcity of the resources, and accordingly managed forests in a sustainable manner. They visualize the pre-British situation as in many ways an ideal one. Nadkarni, Rangan, and Pouchepadass are in varying degrees critical of this view. Pouchepadass (1995) points out that, like the British, the previous rulers used the forests for strategic purposes, including maintenance of the army and extension of agriculture. But he agrees that colonization gave a new dimension to this phenomenon: "and, finally, to serve their own interests, they set up everywhere an increasingly efficient framework of government control, which gradually denied the local populations free access to their traditional natural resource bases, at a time when their numbers were beginning to increase. Although the ecological stresses and traumas resulting from European colonization were not by any means the first events of their kind in the tropics, the scenario for the first time were modern, representing the onslaught of commercial and industrial capital on the natural resources of the world at large." Nadkarni et al. (1989, p. 32) writes: "However, there was a distinction between exclusive private rights over forest land and community rights over its produce. There was no alienation of the locals from the forest in spite of the state ownership of forest land during the pre-capitalist stage." Ribbentrop (1900), a British Inspector General of Forests, has given a detailed account of forest regimes just prior to the arrival of British. "Where the population had settled in joint village communities, any forest or waste land that fell within their boundaries was, as a rule, considered as common property. The cultivators living in un-united villages never had any proprietary rights except in the areas actually under cultivation, though they had, in some instances, doubtless acquired prescriptive rights of user. Though it was then known that the state had inherited extensive proprietary rights in the forests of India from the rulers by whom the territories were ceded, the actual status of the property and its extent were uncertain. This condition of things was probably quite in accordance with the state of society previous to British occupation, when every one was accustomed, without let hindrance, to get what he wanted from the forest."
What seems clear enough, from these accounts, is the frequency (dominance) of community regimes in the pre-British period, and their decline thereafter. Whether the communities evinced a high level of environmental awareness is harder to judge, and beyond the scope of this paper.

[8] Until this 1894 policy, there had been only one level of forest institutions in British India, represented by the forest acts. The 1894 forest policy statement added a new level, the top one in the terminology of this paper.

[9] One British planter killed four hundred elephants in the 1860s in the Nilgiris (Guha & Gadgil, 1989).

[10] In the medieval period (roughly AD 500 to 1500), government in Europe was highly decentralized and divided among persons, groups, and orders. Community was extremely localized, and the manor was the basic unit of society. The lord was the largely independent ruler of this domain. However, tension among the localized power centers eventually become too great, the medieval order started deteriorating in the twelfth century, and its collapse was complete by the seventeenth century, at least in western Europe, to be succeeded by the typical political organization of modern life, the "nation state" emerged. The 18th and 19th century witnessed the extension of nation states and bureaucratic management to other parts of the world (Hitchner & Harbold, 1992). Hence, new Indian forest regimes were just an extension of the concept of the "state" of the British empire to forest resources of India.

[11] A seminal paper "The Role of Forest Industries in the Attack on Industrial Development" by Jack Westoby (1962), an FAO forest economist, provided a basis for that institution's policies for at least a

couple of decades.

[12] In economics, the phenomenon whereby an increased role of the market enhances belief in its continued prevalence is an example of "adaptive expectations". In the case of institutions, an increased prevalence of contracting based on a specific institution reduces uncertainties about its permanence (North, 1990, p.94).

[13] Similar expectations on the part of the government were also reflected in the continuation of such core components of the general administration as the Indian Civil Service and the Indian Police Service.

[14] For a detailed discussion of forest regimes in India see Kant, 1996, and Kant & Berry, 2001.

[15] Dr. A. Banerjee, who was DFO in this area, graduated from the University of Toronto in 1969. The more open, less bureaucratic, and more innovative environment of a western university may have contributed to Dr. Banerjee's inclination to try something new when back in India.

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